

|    | Search Text                              | DBs   | Time Stamp       |
|----|--|---|------------------|
| 1  | hydrotalcite and polycarbonate.ccls.     | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:24 |
| 2  | (hydrotalcite and polycarbonate).ccls.   | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:24 |
| 3  | (hydrotalcite and polycarbonate).clm.    | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:38 |
| 4  | polycarbonate.clm.                       | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:25 |
| 5  | hydrotalcite.clm. and polycarbonate.clm. | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:49 |
| 6  | "4729854"                                | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:38 |
| 7  | "4085088"                                | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:38 |
| 8  | (hydrotalcite and polycarbonate).ab.     | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:58 |
| 9  | chung.in.                                | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:50 |
| 10 | chung.in. and hydrotalcite               | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:50 |
| 11 | (524/436).CCLS.                          | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 10:59 |
| 12 | (524/437).CCLS.                          | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 11:00 |
| 13 | (524/444).CCLS.                          | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 11:00 |
| 14 | (524/448).CCLS.                          | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 11:00 |
| 15 | hydrotalcite.clm.                        | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 11:01 |
| 16 | polycarbonate.ti.                        | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 11:01 |
| 17 | hydrotalcite.ti. and polycarbonate.ti.   | USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB | 2003/09/02 11:01 |

|    | Search Text                                       | DBs   | Time Stamp          |
|----|---|---|---------------------|
| 18 | hydrotalcite.ti.                                  | USPAT; US-PGPUB;<br>EPO; JPO;<br>DERWENT; IBM_TDB | 2003/09/02<br>11:03 |
| 19 | 524/442   | USPAT; US-PGPUB;<br>EPO; JPO;<br>DERWENT; IBM_TDB | 2003/09/02<br>11:04 |
| 20 | hydrotalcite.ti. and<br>polycarbonate and mold\$3 | USPAT; US-PGPUB;<br>EPO; JPO;<br>DERWENT; IBM_TDB | 2003/09/02<br>11:04 |
| 21 | hydrotalcite and (mg! adj 4!)                     | USPAT; US-PGPUB;<br>EPO; JPO;<br>DERWENT; IBM_TDB | 2003/09/02<br>12:12 |
| 22 | hydrotalcite and (mg adj 4!)                      | USPAT; US-PGPUB;<br>EPO; JPO;<br>DERWENT; IBM_TDB | 2003/09/02<br>12:11 |
| 23 | hydrotalcite.ti.                                  | USPAT; US-PGPUB;<br>EPO; JPO;<br>DERWENT; IBM_TDB | 2003/09/02<br>12:13 |
| 24 | hydrotalcite.ti. and polymer                      | USPAT; US-PGPUB;<br>EPO; JPO;<br>DERWENT; IBM_TDB | 2003/09/02<br>12:14 |
| 25 | (hydrotalcite.ti. and polymer)<br>and molding     | USPAT; US-PGPUB;<br>EPO; JPO;<br>DERWENT; IBM_TDB | 2003/09/02<br>12:36 |
| 26 | dht near3 hydrotalcite                            | USPAT; US-PGPUB;<br>EPO; JPO;<br>DERWENT; IBM_TDB | 2003/09/02<br>12:36 |

## PATENT ABSTRACTS OF JAPAN

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(21)Application number : 04-039252

(71)Applicant : MITSUBISHI KASEI CORP

(22)Date of filing : 26.02.1992

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OYAMA HAJIME

(54) POLYCARBONATE RESIN COMPOSITION

(57)Abstract:

PURPOSE: To provide a polycarbonate resin composition having antistaticity, mechanical strength, hydrolysis resistance and coloring flexibility.

CONSTITUTION: The objective polycarbonate resin composition can be produced by compounding 100 pts.wt. of a polycarbonate resin with 0.1-20 pts.wt. of an alkylsulfonate antistatic agent and 0.001-3 pts.wt. of a hydrotalcite compound.

## LEGAL STATUS

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2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to an antistatic performance, a mechanical strength, and the polycarbonate resin constituent excellent in adding-water-proof resolvability.

[0002]

[Description of the Prior Art] Polycarbonate resin is excellent in thermal resistance and shock resistance, and is widely used for fields, such as various machine parts, such as OA and an office machine, and an electrical part.

[0003] With office dexterous parts, such as a dry copy and facsimile, especially chassis, it combines with a dimensional accuracy and a mechanical strength, and an antistatic performance is required for the trouble prevention by electrification with the parts and paper. However, in machine parts, such as the conventional chassis, there was no demand of design nature, it was also good that a color tone etc. could creep and black was rather liked from the ease of doing of toning etc. Therefore, combination of conductive carbon black and a carbon fiber was performed.

[0004] On the other hand, although the optical disk attracts attention from the size of storage amount of information recently, since record and reproduction are performed by the laser beam which converged on 1 micro or less, few dust influences record and reproduction. Although it is thought that an optical disk is contained to a cartridge and dealt with as it is as a cure of these troubles, antistatic is given also to the cartridge and the double cure of preventing dust adhering is taken into consideration. From the exterior parts for such office machines, for example, a cartridge, an impact strength is required for the breakage prevention at the time of fall, and since reliability is required over a long period of time, as for an optical disk, it is called for also from the cartridge that a mechanical strength does not fall even if put on high-humidity/temperature atmosphere for a long time.

[0005] On the other hand, to be the material of the white system which can do coloring freely is demanded from the demand on a design. Therefore, with those material, although the material which blended the sulfonate type antistatic agent, especially the alkyl sulfonate type antistatic agent with polycarbonate resin from the former is used, since the molecular weight of polycarbonate resin falls by hydrolysis in high-humidity/temperature atmosphere, the mechanical strength falls remarkably.

[0006] Therefore, the actual condition was that the resin constituent which has antistatic nature required as a charge of optical disk cartridge material, a mechanical strength, adding-water-proof resolvability, and the free nature of coloring is not obtained.

[0007]

[Problem(s) to be Solved by the Invention] this invention aims at offering the polycarbonate resin constituent which fills the military requirement described above under such the actual condition.

[0008]

[Means for Solving the Problem] In order to obtain the resin constituent which fills the four above-mentioned demand characteristics, as a result of inquiring wholeheartedly, by blending an alkyl sulfonate type antistatic agent and a specific inorganic compound with polycarbonate resin, this invention persons found out that the constituent which suits the purpose was obtained, and reached this invention.

[0009] That is, the summary of this invention consists in the polycarbonate resin constituent which comes to blend the alkyl sulfonate type antistatic agent 0.1 - 20 weight sections, and the hydrotalcite compound 0.001 - 3 weight sections to the polycarbonate resin 100 weight section.

[0010] this invention is explained concretely below.

[0011] Aromatic polycarbonate resin is the polymer or copolymer obtained by the ester-interchange method to which the phosgene method to which various dihydroxy diaryl compounds and phosgenes are made to react or a dihydroxy

diaryl compound, and carbonates, such as diphenyl carbonate, are made to react, and the polycarbonate resin manufactured from 2 and 2-screw (4-hydroxyphenyl) propane (bisphenol A) is raised as a typical thing.

[0012] As the above-mentioned dihydroxy diaryl compound Screw (4-hydroxyphenyl) methane [ besides bisphenol A ], 1, and 1-screw (4-hydroxyphenyl) ethane, 2 and 2-screw (4-hydroxyphenyl) butane, 2, and 2-screw (4-hydroxyphenyl) octane, Screw (4-hydroxyphenyl) phenylmethane, 2, and 2-screw (4-hydroxy-3-methylphenyl) propane, 1 and 1-screw (the 4-hydroxy-3-3rd butylphenyl) propane, 2 and 2-screw (4-hydroxy-3-BUROMO phenyl) propane, 2, and 2-screw (4-hydroxy-3, 5 dibromo phenyl) propane, The screw (hydroxy aryl) alkanes like 2 and 2-screw (4-hydroxy-3, 5 dichlorophenyl) propane The screw (hydroxy aryl) cycloalkanes like 1 and 1-screw (4-hydroxyphenyl) cyclopentane, 1, and 1-screw (4-hydroxyphenyl) cyclohexane 4, a 4'-dihydroxy diphenyl ether, 4, 4'-dihydroxy -3, and the dihydroxy diaryl ether like a 3'-dimethyl diphenyl ether 4, a 4'-dihydroxydiphenyl sulfide, 4, 4'-dihydroxy -3, and the dihydroxy diaryl sulfides like a 3'-dimethyl diphenyl sulfide 4, a 4'-dihydroxydiphenyl sulfoxide, 4, 4'-dihydroxy -3, and the dihydroxy diaryl sulfoxides like a 3'-dimethyl diphenyl sulfoxide 4, 4'-dihydroxy diphenylsulfone, 4, 4'-dihydroxy -3, and the dihydroxy diaryl sulfones like 3'-dimethyl diphenylsulfone are raised.

[0013] Although these are independent, or two or more sorts use them, mixing, they may use piperazine, dipiperidyl, hydroquinone, resorcinol, 4, and 4'-dihydroxydiphenyl etc., mixing other than these.

[0014] Although the molecular weight of a polycarbonate is greatly related to a fluidity, its thing of 14000-30000 is desirable from balance with an on-the-strength side.

[0015] The alkyl sulfonate type antistatic agent used by this invention is a compound shown by the lower formula (1).

[0016]  $R-SO_3M$  -- (1)

here -- R -- carbon numbers 1-22 -- although it is the straight chain or branching alkyl group of carbon numbers 8-18 preferably and M is chosen from cation components, such as alkali metal, alkaline earth metal or a phosphonium, ammonium, and cull BONIUMU, alkali metal is desirable and sodium is the most desirable especially

[0017] As such an alkyl sulfonate, n-hexyl sulfonic-acid sodium, n-dodecyl sulfonic-acid sodium, n-octadecyl sulfonic-acid sodium, etc. are raised.

[0018] these alkyl sulfonate type antistatic agents -- one sort -- or two or more sorts may be mixed and you may use moreover, the loadings -- the polycarbonate resin 100 weight section -- receiving -- 0.1 - 20 weight section -- it is within the limits of 0.5 - 5 weight section preferably If under the 0.1 weight section of an antistatic performance is inadequate and 20 weight sections are surpassed, the mechanical strength of a polycarbonate will fall sharply.

[0019] The hydrotalcite compound used by this invention is shown by the lower formula (2).

$Mg(1-x) Al_x (OH) 2CO_3(x/2) and mH_2O$  -- (2)

( $X=0.1\sim0.4, m=0\sim1$ )

Moreover, a hydrotalcite compound is an impalpable powder-like and its thing of about 0.1-5 micrometers of \*\*\*\*\* is desirable. Such a compound is marketed with a tradename called DHT from Consonance Chemical industry.

[0020] the loadings of a hydrotalcite compound -- the polycarbonate resin 100 weight section -- receiving -- 0.001 - 3 weight section -- it is within the limits of 0.005 - 1 weight section preferably Under in the 0.001 weight section, it is ineffective, and if 3 weight sections are surpassed, the molecular weight of a polycarbonate will be reduced.

[0021] Although meanses various in the arbitrary stages of a just before [ fabrication of the last mold goods ] can perform as a method of blending an alkyl sulfonate type antistatic agent and a hydrotalcite compound with polycarbonate resin, the method of carrying out melting kneading using an extruder is desirable.

[0022] Although what is necessary is to supply the above-mentioned blend object and a pellet to various making machines, such as injection, extrusion, a blow, and compression, and just to fabricate according to a conventional method in obtaining the last mold goods, depending on the case, an additive can be added with a making machine. It is more desirable to save resin temperature at 220-300 degrees C in the fabrication which obtains the last mold goods.

[0023] Moreover, in order that the constituent of this invention may raise the dispersibility of an alkyl sulfonic-acid type antistatic agent, it is desirable one sort or to contain a silicon dioxide, fatty acid ester, an oxidization polyethylene wax, polystyrene, a polyethylene glycol, two or more sorts of metal soap, etc.

[0024] Moreover, the various additives of common knowledge in addition to the compound of the above [ the constituent of this invention ], For example, a glass fiber, glass flakes, a glass bead, a carbon fiber, a mineral fiber, Reinforcing agents, such as a metal fiber and a ceramic whisker, carbon black, Bulking agents, such as a calcium carbonate, paraffin wax, a polyethylene wax, Release agents, such as beeswax and a silicone oil, a hindered phenol, phosphorous acid ester, Weatherability grant agents, such as antioxidants, such as a sulfur content ester compound, and a triazine system, You may contain flame retarders, such as a halogenated compound and a phosphoric-acid compound, a color, a pigment, a foaming agent, etc. Moreover, you may contain olefin system resins, such as styrene resins, such

as polyester system resins, such as PET and PBT, and ABS, AAS, polyethylene, polypropylene, and an ethylene propylene rubber, etc.

[0025]

[Example] The bisphenol A polycarbonate (the Mitsubishi Kasei Corp. make, tradename nova REKKUSU7022A) of a viscosity average molecular weight 22000, alkyl sulfonic-acid sodium (the product made from Takemoto Fats and oils, carbon numbers 12-18 of an alkyl group), and hydrotalcite DHT-4A-2 (product made from Consonance Chemical industry) were blended by prescription shown in Table -1, and \*\*\*\*\* pelletizing was carried out at 270 degrees C by extruder TEX-30with Japan Steel Works biaxial vent C. The 1/8 inch Izod test piece and the plate of 2mm \*\* of 100mm angles were fabricated for the pellet at the molding temperature of 280 degrees C, and 90 degrees C of die temperatures after 6-hour dryness using the injection molding machine (Toshiba Machine information-separator75PN2) in 120-degree-C oven.

[0026] The obtained Izod test piece is used and it is ASTM. Izod impactive strength is measured according to D256, 100mm angle plate is used, and it is ASTM at Mitsubishi Petrochemical highness RESUTA IP. Surface electrical resistance was measured according to D257. Moreover, after putting the pellet into the pressure cooker and performing steam processing by 120 degrees C and 2atm for 1 hour, the viscosity average molecular weight was measured by using a methylene chloride as a solvent according to the formula (3) of Schnell using the Ostwald viscometer.

[0027]

[eta] =  $1.23 \times 10^{-5} M^{0.83}$  (3)

(M : molecular weight)

The obtained result is shown in Table 1.

[0028]

[Table 1]

|       | 配合 (重量部)     |                    |               | 1/8Tノット<br>衝撃強度<br>(kg · cm<br>/ cm) | 表面抵抗<br>(Ω / □)    | スチーム<br>処理後の<br>分子量 |
|-------|--------------|--------------------|---------------|--------------------------------------|--------------------|---------------------|
|       | ポリカー<br>ボネート | アルキルスルホン酸<br>ナトリウム | ハイドロタ<br>ルサイト |                                      |                    |                     |
| 実施例 1 | 100          | 1.5                | 0.05          | 8 8                                  | $6 \times 10^{11}$ | 20900               |
| 実施例 2 | 100          | 1.5                | 0.1           | 9 0                                  | $5 \times 10^{11}$ | 21000               |
| 実施例 3 | 100          | 3.0                | 0.1           | 8 7                                  | $3 \times 10^{10}$ | 20700               |
| 比較例 1 | 100          | —                  | —             | 9 3                                  | $> 10^{13}$        | 21200               |
| 比較例 2 | 100          | 1.5                | —             | 8 8                                  | $7 \times 10^{11}$ | 17500               |
| 比較例 3 | 100          | 3.0                | —             | 8 5                                  | $5 \times 10^{10}$ | 17100               |
| 比較例 4 | 100          | 3.0                | 4.0           | 1 5                                  | $8 \times 10^{10}$ | 16600               |

[0029]

[Effect of the Invention] As explained above, an impact strength and an antistatic performance are excellent, and since the resin constituent of this invention has few molecular weight falls by steam processing (that is, adding-water-proof resolvability is excellent), it is suitable as material, such as an optical disk cartridge.

[Translation done.]

## PATENT ABSTRACTS OF JAPAN

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C08K 3/34  
C08K 5/372  
C08K 5/5398

(21)Application number : 05-212760

(71)Applicant : MITSUBISHI CHEM CORP

(22)Date of filing : 27.08.1993

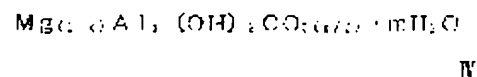
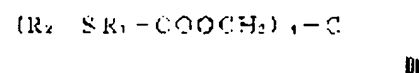
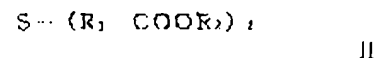
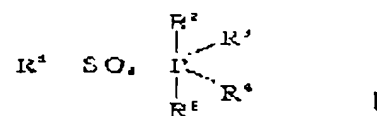
(72)Inventor : NAKADA MICHIO  
YOSHIDA SEIJI

## (54) POLYCARBONATE RESIN COMPOSITION

## (57)Abstract:

PURPOSE: To obtain the subject composition, excellent in antistatic properties, transparency, thermal stability and metallic corrosion resistance and useful as electrical parts, etc., by blending a polycarbonate resin with a specific phosphorus compound, a sulfur-containing ester compound and hydrotalcites.

CONSTITUTION: This composition is obtained by blending (A) 100 pts.wt. polycarbonate resin with (B) 0.1-20 pts.wt. phosphonium sulfonate expressed by formula I (R1 is a 1-40C alkyl or a 1-40C aryl, preferably a 6-40C aryl; R2 to R5 are each H, a 1-10C alkyl or a 1-10C aryl), (C) 0.01-3 pts.wt. sulfur-containing ester compound expressed by formula II (R1 is a 1-10C alkylene; R2 is a 3-40C alkyl) such as a compound expressed by formula III and (D) 0.001-2 pts.wt. compound of hydrotalcites expressed by formula IV (X is 0.1-0.4; (m) is 0-1).



## LEGAL STATUS

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3296036

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3. In the drawings, any words are not translated.

## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the polycarbonate resin constituent [ excellent in a fluidity, a mechanical strength, transparency, antistatic nature, thermal stability and the corrosion behavior-proof ] especially useful as office dexterous exterior parts, such as a cartridge of an optical disk.

[0002]

[Description of the Prior Art] Polycarbonate resin is excellent in thermal resistance and shock resistance, and is widely used for fields, such as various machine parts, such as OA and an office machine, and an electrical part. With office dexterous parts, such as a dry copy and facsimile, especially chassis, it combines with a dimensional accuracy and a mechanical strength, and an antistatic performance is required for the trouble prevention by electrification with the parts and paper.

[0003] And on a function, as for the cartridge of an optical disk etc., it is desirable that an internal product appears, and it is very important for it also in respect of design nature. Moreover, also in the exterior parts for office work, it is transparent, and the conditions that an internal visible thing is indispensable have many bird clappers. as a material which fills such a demand, the constituent which comes to blend sulfonic-acid phosphonium salt and phosphorous acid ester with polycarbonate resin is known -- \*\*\*\* (JP,1-14267,A) -- the constituent concerned has the fault of being easy to yellow the thermal stability at the time of melting at the time of eye an inadequate hatchet and a fabricating operation

[0004] In order to improve this fault, the constituent which added the specific sulfur compound as a thermostabilizer is proposed (JP,5-171024,A).

Manufacture of these constituents is manufactured by carrying out melting kneading using an extruder etc. And in order to obtain desired mold goods, it passes along the forming cycle which uses making machines, such as an injection molding machine, further.

[0005] however, the aforementioned constituent -- the inside of making machines, such as making machines, such as an extruder, and an injection molding machine, -- further -- metal mold -- when contacting a metal in the state of melting for a long time, it had the problem of making a metal corrode in inside

[0006]

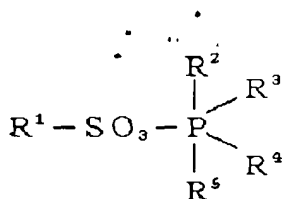
[Problem(s) to be Solved by the Invention] this invention is excellent in transparency, an antistatic performance, and thermal stability, and aims at offering the polycarbonate resin constituent with which the corrosion behavior-proof was moreover improved sharply.

[0007]

[Means for Solving the Problem] As a result of inquiring wholeheartedly to obtain the resin constituent which fulfills the above-mentioned conditions, by blending sulfonic-acid phosphonium salt, a specific sulfur compound, and a hydrotalcite compound with polycarbonate resin, this invention persons are transparent, are excellent in an antistatic performance or thermal stability, find out that the resin constituent which improved sharply the corrosion behavior-proof at the time of moreover touching a metal in the state of melting is obtained, and reach this invention.

[0008] That is, the summary of this invention is the sulfonic-acid phosphonium salt 0.1 - 20 weight sections which are expressed with the (I) following general formula to the polycarbonate resin 100 weight section. [0009]

[Formula 2]



[0010] (R1 is the alkyl group or aryl group of carbon numbers 1-40 among a formula, R2-R6 are the alkyl groups or aryl groups of a hydrogen atom and carbon numbers 1-10, and even if these are the same, they may differ.)

(II) It consists in the polycarbonate resin constituent which comes to blend the sulfur content ester compound 0.01 - 3 weight sections, and (III) the hydrotalcite compound 0.001 - 2 weight sections.

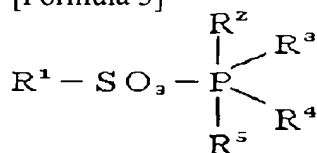
[0011] this invention is explained concretely below. Aromatic polycarbonate resin is the polymer or copolymer obtained by the ester-interchange method to which the phosgene method to which various dihydroxy diaryl compounds and phosgenes are made to react or a dihydroxy diaryl compound, and carbonates, such as diphenyl carbonate, are made to react, and the polycarbonate resin manufactured from 2 and 2-screw (4-hydroxyphenyl) propane (bisphenol A) is raised as a typical thing.

[0012] As the above-mentioned dihydroxy diaryl compound Screw (4-hydroxyphenyl) methane [ besides bisphenol A ], 1, and 1-screw (4-hydroxyphenyl) ethane, 2 and 2-screw (4-hydroxyphenyl) butane, 2, and 2-screw (4-hydroxyphenyl) octane, Screw (4-hydroxyphenyl) phenylmethane, 2, and 2-screw (4-hydroxy-3-methylphenyl) propane, 1 and 1-screw (the 4-hydroxy-3-3rd butylphenyl) propane, 2 and 2-screw (4-hydroxy-3-BUOMO phenyl) propane, 2, and 2-screw (4-hydroxy-3, 5-dibromo phenyl) propane, The screw (hydroxy aryl) alkanes like 2 and 2-screw (4-hydroxy-3, 5-dichlorophenyl) propane The screw (hydroxy aryl) cycloalkanes like 1 and 1-screw (4-hydroxyphenyl) cyclopentane, 1, and 1-screw (4-hydroxyphenyl) cyclohexane 4 and 4-dihydroxy diphenyl ether, 4, 4'-dihydroxy -3, and the dihydroxy diaryl ether like a 3'-dimethyl diphenyl ether 4, a 4'-dihydroxydiphenyl sulfide, 4, 4'-dihydroxy -3, and the dihydroxy diaryl sulfides like a 3'-dimethyl diphenyl sulfide 4, a 4'-dihydroxydiphenyl sulfoxide, 4, 4'-dihydroxy -3, and the dihydroxy diaryl sulfoxides like a 3'-dimethyl diphenyl sulfoxide 4, 4'-dihydroxy diphenylsulfone, 4, 4'-dihydroxy -3, and the dihydroxy diaryl sulfones like 3'-dimethyl diphenylsulfone are mentioned.

[0013] Although these are independent, or two or more sorts use them, mixing, they may use piperazine, dipiperidyl, hydroquinone, resorcinol, 4, and 4'-dihydroxydiphenyl etc., mixing other than these. Although the molecular weight of a polycarbonate is greatly related to a fluidity, its thing of 14000-30000 is desirable from balance with an on-the-strength side.

[0014] Moreover, as sulfonic-acid phosphonium salt used by this invention, it is a general formula. [0015]

[Formula 3]



[0016] it comes out, and it is expressed and, as for R1, the alkyl group of carbon numbers 1-40 or an aryl group, and R2-R5 are hydrogen, the alkyl group of carbon numbers 1-10, or an aryl group (even if these are the same, they may differ) here the compound shown by the aforementioned general formula -- the polycarbonate resin 100 weight section -- receiving -- 0.1 - 20 weight section -- 0.5-5 weight section combination is carried out preferably Under in the 0.1 weight section, it is not obtained, but if 20 weight sections are exceeded, transparency will fall, a mechanical property falls, silver and exfoliation arise on a mold-goods front face, and an antistatic effect tends to cause poor appearance to it.

[0017] In addition, although the above R1 is an alkyl group or an aryl group, points, such as influence on transparency, thermal resistance, and polycarbonate resin, to the aryl group (namely, aryl group of carbon numbers 6-40) is more more desirable, for example, the basis guided from an alkylbenzene, an alkyl naphthalene ring, etc. is mentioned. As a concrete compound, a dodecyl sulfonic-acid phosphonium, the dodecylbenzenesulfonic acid phosphonium, etc. are mentioned.

[0018] Although it is required in this invention for there to be little discoloration at the time of a melting fabricating operation simultaneously with transparency, it has a fault of an induction plain-gauze cone for the heat deterioration of polycarbonate resin, and discoloration only by the above-mentioned phosphonium salt. Then, discoloration and degradation of polycarbonate resin improve remarkably by blending a still more nearly little sulfur content ester compound.

[0019] the sulfur content ester compound used by this invention -- the inside of a molecule -- a sulfur atom -- it is the ester compound which has one piece even if few, and, specifically, what has the following general formula (1) or the structure of (2) is desirable

[0020]

[Formula 4]  $S-(R1-COOR2)_2$  (1)

$(R2-SR1-COOCH_2)_4-C$  (2)

(However, as for the inside R1 of a formula, R2 shows the alkyl group of carbon numbers 3-40 for the alkylene machine of carbon numbers 1-10.)

As a desirable example of R1, a methylene group, an ethylene, a propylene machine, a butylene machine, a hexylene machine, etc. are mentioned, and an octyl machine, a decyl group, a tridecyl machine, a dodecyl machine, a milli still machine, the Suu Kyi allyl group, etc. are mentioned as a desirable example of R2.

[0021] As a concrete example of these sulfur content ester compounds Dioctyl thiodipropionate, didodecyl thiodipropionate, Dodecyl stearyl thiodipropionate, distearyl thiodipropionate, Dimyristyl thiodipropionate, JIDESHIRU thiodipropionate, Didodecyl - beta, beta'-CHIOJI butyrate, distearyl - beta, beta'-CHIOJI butyrate, Pentaerythritol-tetrakis (dodecyl thiopropionate), PENTA ERIS toll-tetrakis (dodecyl thio acetate), pentaerythritol-tetrakis (dodecyl thio butyrate), pentaerythritol-tetrakis (octadecyl thiopropionate), etc. are mentioned. In these, they are didodecyl thiodipropionate, distearyl thiodipropionate, and distearyl. - beta and beta'-CHIOJI butyrate and pentaerythritol-tetrakis (dodecyl thiopropionate) are desirable.

[0022] These sulfur content ester compounds are independent, or are combined two or more sorts and used. the loadings of a sulfur content ester compound -- the polycarbonate resin 100 weight section -- receiving -- 0.01 - 3 weight section -- it is 0.03 - 1 weight section preferably If the improvement effect of thermal stability is not acquired for the loadings of a sulfur content ester compound under in the 0.01 weight section but 3 weight sections are exceeded, since it will become easy to generate gas at the time of the fabricating operation of this invention constituent, it is not desirable.

[0023] The hydrotalcite compound used by this invention is shown by the lower formula.

[0024]

[Formula 5]  $Mg(1-x) Al_x (OH)_2 CO_3(x/2) \cdot mH_2O$  ( $X=0.1$  to  $0.4$ ,  $m=0-1$ )

Moreover, a hydrotalcite compound is an impalpable powder-like and its thing of about 0.1-5 micrometers of \*\*\*\*\* is desirable. Such a compound is marketed with a tradename called DHT from Consonance Chemical industry. In addition, a commercial thing is usually the mixture of the compound which has various X values and m value.

[0025] the loadings of a hydrotalcite compound -- the polycarbonate resin 100 weight section -- receiving -- 0.001 - 2 weight section -- it is within the limits of the 0.005 - 0.5 weight section preferably It is ineffective in under the 0.001 weight section. On the other hand, if 2 weight sections are surpassed, it will reduce the molecular weight of a polycarbonate remarkably and it not only brings about deterioration of a mechanical property, but will bring about aggravation of an antistatic performance, and the fall of transparency.

[0026] As a method of blending polycarbonate resin, sulfonic-acid phosphonium salt, a sulfur content ester compound, and a hydrotalcite compound, it is arbitrary stages until just before fabricating the last mold goods, and various meanses can perform. Although the simplest method is the method of carrying out the dryblend of a polycarbonate and the additive, its method of performing melting mixture extrusion, BERETTO-izing this dryblend object, and presenting fabrication with it is desirable.

[0027] moreover, it is \*\*\*\*\* about the additive more than the specified quantity -- a master pellet may be prepared and this may be blended with the polycarbonate for dilution In addition, it is more desirable to use a twin screw extruder, using a dull MEJI type screw, when it is a 1 shaft extruder to have devised preferably [ direction ] so that it might face to perform melting mixture extrusion and distribution of an additive might be improved. Although what is necessary is to supply the above-mentioned blend object and a pellet to various making machines, such as injection, extrusion, a blow, and compression, and just to fabricate according to a conventional method in obtaining the last mold goods, depending on the case, an additive can be added with a making machine. It is more desirable to hold resin temperature at 220-300 degrees C in the fabrication which obtains the last mold goods.

[0028] Moreover, the constituent of this invention may contain the flame-retarder firing agent of weatherproof grant agents, such as well-known various additives, for example, a glass fiber, a carbon fiber, a reinforcing agent like a metal whisker, carbon black, a calcium carbonate, a bulking agent like a glass bead, other paraffin wax, fatty acid ester, lubricant like a silicone oil, and a triazine system, a halogen system, and a phosphoric-acid system, a color, a pigment, etc. in addition to the above-mentioned compound. Moreover, you may use together polymer, such as a polybutylene

terephthalate, a polyethylene terephthalate, polyethylene, and polyethylene pro bilene copolymerization.

[0029]

[Example] Although an example explains this invention in more detail below, this invention is not limited to these examples. In addition, the "section" shows the "weight section" among an example. Here, the measuring method of the physical properties in an example is as follows.

\*\* Put in polymer and an JIS-SCN435 metal test piece (chromium-molybdenum-steel; alloy steel for structures) into the evaluation glass airtight container of a corrosion behavior, and heat at 310 degrees C under a N2 seal. It cools, after a test piece maintains in the state where it was immersed in melting polymer for 1 hour. A test piece is taken out, it will be left in RH atmosphere 23 degree-Cx60% for one day, and a metaled surface situation will be observed.

[0030] \*\* Apply to surface specific resistance ASTM-D -257 correspondingly.

\*\* Apply to light-transmission JIS-K -7105 correspondingly.

In addition, the tetrabutyl phosphonium salt and the hydrotalcite of a sulfur content ester compound and dodecylbenzenesulfonic acid which are shown in Table 1 were formed into \*\*\*\*\* BERETTO at 270 degrees C to the bisphenol A type polycarbonate resin 100 weight section of examples 1-6 and the <example 1 of comparison> molecular weight 21000 by extruder TEX-30with biaxial vent by the Japan Steel Works, Ltd. C with the loadings shown in Table 1.

[0031] 120-degree-C oven performed corrosion-behavior evaluation for the pellet after 6-hour dryness. Moreover, the 100mmx100mmx2mm plate was fabricated for the pellet after this dryness at the molding temperature of 280 degrees C, and 90 degrees C of die temperatures using the injection molding machine (Toshiba Machine information-separator758NZ type). According to ASTM-D -257, surface electrical resistance was measured using this plate by Mitsubishi Petrochemical highness RESUTA IP. Moreover, in order to ask for this monotonous light transmission, according to JIS-K -7105, the permeability of a 600nm beam of light was measured.

[0032] A result is shown in Table 1.

[0033]

[Table 1]

| 実施例No | (I) <sup>1</sup><br>(部) | (II) <sup>2</sup> |      | (III) <sup>3</sup><br>(部) | 金属<br>腐食性 | 表面<br>抵抗<br>(Ω/□) | 光線<br>透過率<br>(%) |
|-------|-------------------------|-------------------|------|---------------------------|-----------|-------------------|------------------|
|       |                         | 種類                | 配合量  |                           |           |                   |                  |
| 実施例 1 | 6. 0                    | A                 | 0. 1 | 0.06                      | 腐食なし      | 3×10"             | 8 2              |
| 実施例 2 | 6. 0                    | A                 | 0. 1 | 0.12                      | 腐食なし      | 4×10"             | 8 0              |
| 実施例 3 | 6. 0                    | B                 | 0. 1 | 0.06                      | 腐食なし      | 4×10"             | 8 2              |
| 比較例 1 | 6. 0                    | A                 | 0. 1 | —                         | 腐食あり      | 2×10"             | 8 5              |
| 比較例 2 | 6. 0                    | A                 | 0. 1 | 4.0                       | 腐食なし      | 4×10"             | 2 0              |

\* 1 (I) ... Tridecyl benzenesulfonic-acid phosphonium \*2 (II) .. Sulfur content ester compound A. pentaerythritol tetrakis (dodecyl thiopropionate)

B. Didodecyl thiodipropionate \*3 (III) .. Hydrotalcite (the product made from Consonance Chemical industry, tradename DHT)

[0034]

[Effect of the Invention] The polycarbonate resin constituent of this invention made the corrosion behavior-proof of the portion to which it excels in a mechanical strength, an electrical property, transparency, and thermal stability, and the melting resin in the case of fabrication contacts a metal improve sharply. It is suitable as the electrical and electric equipment and a charge of electronic-parts material as which an antistatic performance and transparency are required.

[Translation done.]